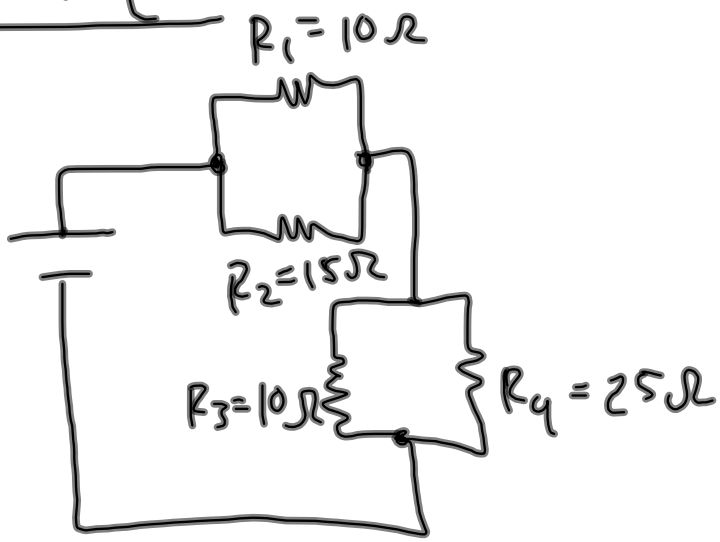
find $R_{eq}$:

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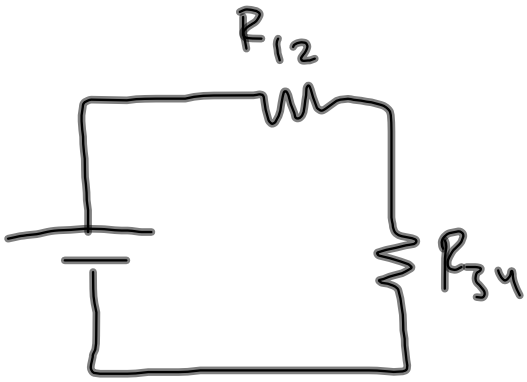
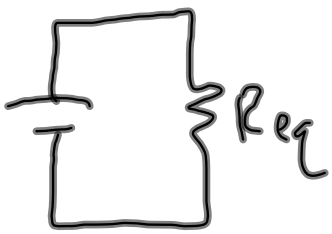



$$\frac{1}{R_{12}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$R_{12} = 6\,\Omega$$

$$\frac{1}{R_{34}} = \frac{1}{R_3} + \frac{1}{R_4}$$

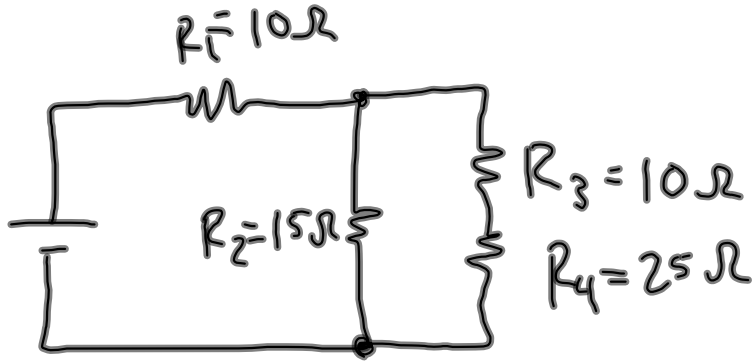
$$R_{34} = 7.14\,\Omega$$




$$R_{eq} = R_{12} + R_{34}$$

$$= 13.14\,\Omega$$

## find $R_{eq}$:

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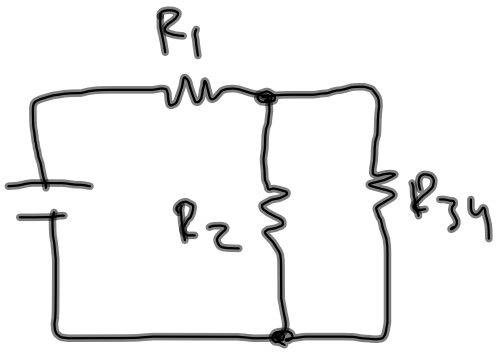
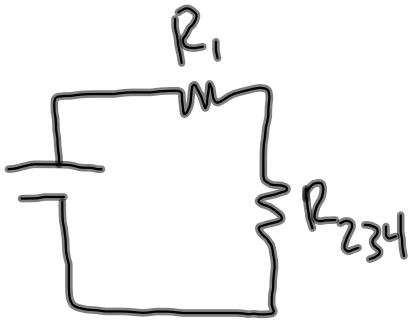
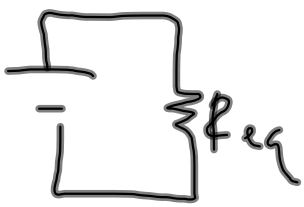



$$R_{34} = R_3 + R_4$$
$$= 35\,\Omega$$




$$\frac{1}{R_{234}} = \frac{1}{R_2} + \frac{1}{R_{34}}$$

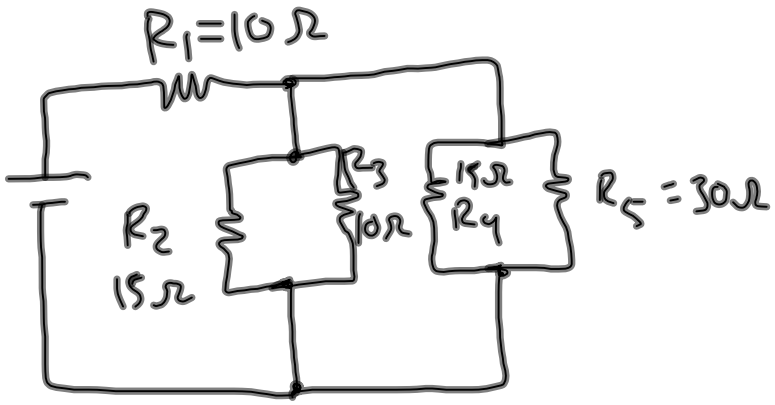
$$R_{234} = 10.5\,\Omega$$




$$R_{eq} = R_1 + R_{234}$$

$$= 20.5\,\Omega$$

Find $R_{eq}$:

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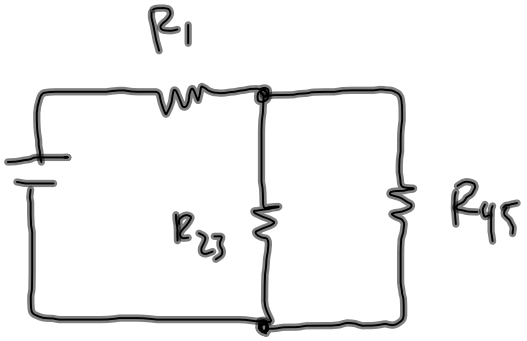
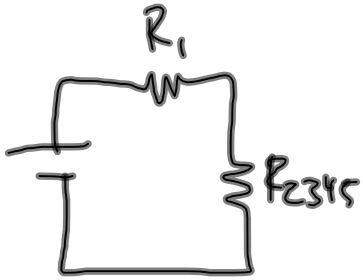



$$R_{23} = \left[\frac{1}{R_2} + \frac{1}{R_3}\right]^{-1}$$

$$= 6\,\Omega$$

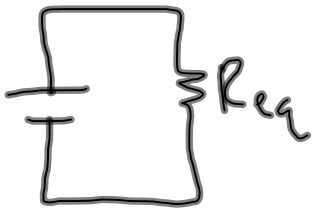
$$R_{45} = \left[\frac{1}{R_4} + \frac{1}{R_5}\right]^{-1}$$

$$= 10\,\Omega$$




$$R_{2345} = \left[\frac{1}{R_{23}} + \frac{1}{R_{45}}\right]^{-1}$$

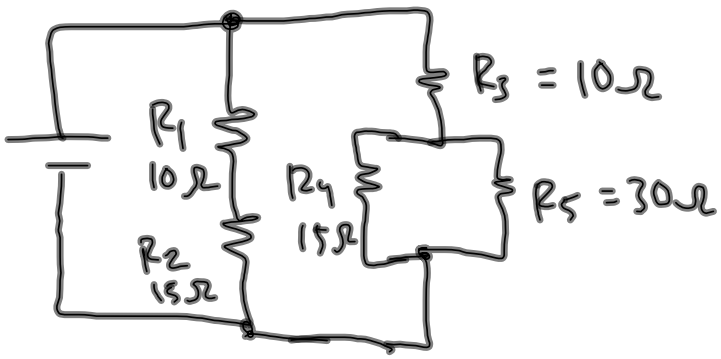
$$= 3.75\,\Omega$$

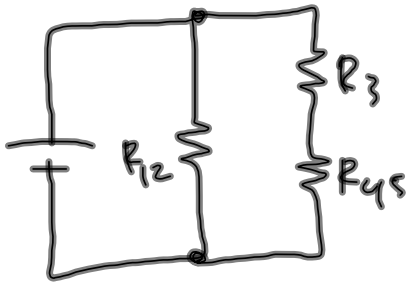



$$R_{eq} = R_1 + R_{2345}$$

$$= 13.75\,\Omega$$

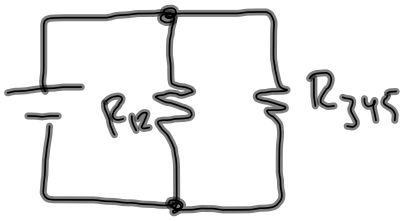
Find $R_{eq}$:



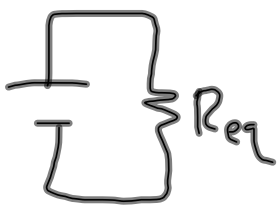




$$R_{12} = R_1 + R_2$$
$$= 25\,\Omega$$

$$R_{45} = \left(\frac{1}{R_4} + \frac{1}{R_5}\right)^{-1}$$
$$= 10\,\Omega$$

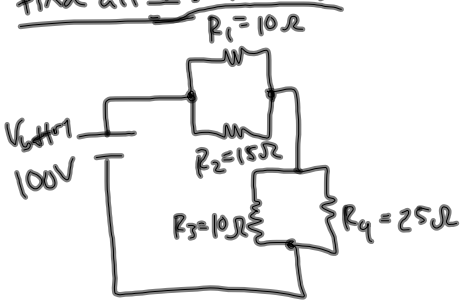



$$R_{345} = R_3 + R_{45}$$
$$= 20\,\Omega$$




$$R_{eq} = \left(\frac{1}{R_{12}} + \frac{1}{R_{345}}\right)^{-1}$$
$$= 11.1\,\Omega$$

find all I's and V's:

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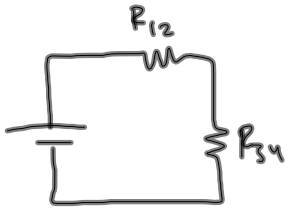
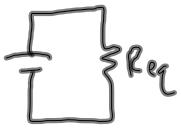



$$\frac{1}{R_{12}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$R_{12} = 6\,\Omega$$

$$\frac{1}{R_{34}} = \frac{1}{R_3} + \frac{1}{R_4}$$

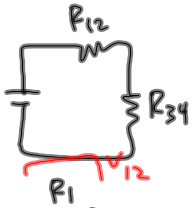
$$R_{34} = 7.14\,\Omega$$




$$R_{eq} = R_{12} + R_{34}$$

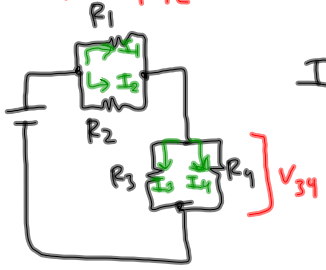
$$= 13.14\,\Omega$$

$$I_{total} = \frac{V_{battery}}{R_{eq}} = 7.61\,A$$




$$V_{12} = I_{total} R_{12} = 45.66\,V$$

$$V_{34} = I_{total} R_{34} = 54.34\,V$$




$$I_1 = \frac{V_{12}}{R_1} = 4.56\,A$$

$$I_2 = \frac{V_{12}}{R_2} = 3.04\,A$$

$$I_3 = \frac{V_{34}}{R_3} = 5.43\,A$$

$$I_4 = \frac{V_{34}}{R_4} = 2.17\,A$$

$V_1 = 45.66\,V$ $I_1 = 4.56\,A$

$V_2 = 45.66\,V$ $I_2 = 3.04\,A$

$V_3 = 54.34\,V$ $I_3 = 5.34\,A$

$V_4 = 54.34\,V$ $I_4 = 2.17\,A$